

# D<sup>®</sup> DATEL<sup>®</sup>

Singles

Reliability

Duals

3-60W

EMC

Customs

Triples

## DC/DC CONVERTERS







## DC/DC Converters for High-Density Distributed Power Applications

*Reliability, efficiency and  
cost-effectiveness define*

*DATEL's broad offering of  
modular, plug-in DC/DC  
converters. Our unique*

*ability to combine proven  
circuit topologies, contem-  
porary SMT construction,  
and highly automated*

*assembly techniques brings  
you exceptional products in  
industry-standard packages  
and pinouts . . . all at very  
affordable prices.*

Committed to  
Continuous Improvement

**ISO 9001**

REGISTERED

MIL-PRF-38534 Qualified

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## Other Products from DATEL

Founded in 1970, today's DATEL is an international electronics manufacturing company maintaining performance and quality leadership in all four of our core product lines:

- Modular DC/DC Converters
- Digital Panel Meters and Instruments
- Sampling A/D Converters and Data Acquisition Components
- Computer Analog I/O Boards for PCI, ISA and VME Buses

## Order Entry

DATEL has direct sales offices in the United States (Mansfield, MA), Germany (Munich), France (Montigny Le Bretonneux), England (Tadley) and Japan (Tokyo and Osaka). We employ an extensive network of field sales representatives and distributors throughout the USA, Canada, Europe, the Far East and other areas around the world.

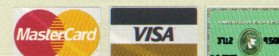
There are four ways in which to purchase DATEL DC/DC Converters:

VISA, Mastercard or American Express credit cards

C.O.D.

Bank check or money order

Open an account with established credit



## Literature

For a detailed data sheet describing any product listed in this brochure or a full product line catalog you can:

Visit us on the internet at [www.datel.com](http://www.datel.com)

Call us at **(800)233-2765** (USA)

Call one of our Subsidiary Office Hotlines (see back cover)

Use our Data Sheet Fax Back Services (see page 11)

## Applications Assistance

DATEL employs a large, knowledgeable, patient staff of degreed Applications and Sales Engineers in both our Headquarters and Subsidiary offices. These experienced engineers are always available to answer any questions you may have concerning the selection or use of any of our products. Please do not hesitate to call us.



# New DC/DC Converters

## 5 Amp

### Non-Isolated 12V-to-5V

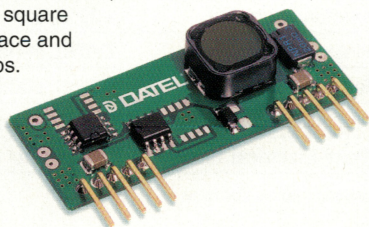
If your 5V bus is reaching its current limit, tap into your 12V line with one of these non-isolated, 12V-to-5V converters. Packaged in a standard 2" x 1" metal case, the UNR-5/5-D12 (see page 4) delivers up to 5 Amps and requires no heat sink or auxiliary cooling.



## 3 Amp

### 5V-to-3.3V SIP's

True power processing at the "point-of-use" is now easier than ever. These non-isolated, 5V-to-3.3V SIP's (UNS Models) occupy a mere 0.7 square inches of board space and deliver up to 3 Amps. See page 4.



## 15 Watts

### in the Standard 10 Watt Footprint

As your power requirements increase, your real-estate requirements will not. The newest members of DATEL's A-Series deliver 50% more power in the standard 2" x 1" package and pinout. Single outputs (UWR Models) at 5, 12 and 15 Volts. UL1950 and EN60950 approvals pending. See pages 5-7.



## 60 Watt "Half Bricks"

You can now get DATEL quality and reliability in the standard "half-brick" (2.3" x 2.4" x 0.5") format. UCP Models are single-output 3.3, 5, 12 or 15V devices delivering 18, 12, 5 or 4 Amps, respectively. Choose from 9-18, 18-36 or 36-75V input ranges. UL1950 and EN60950 approvals pending. See pages 5-7.



## 25-40 Watts

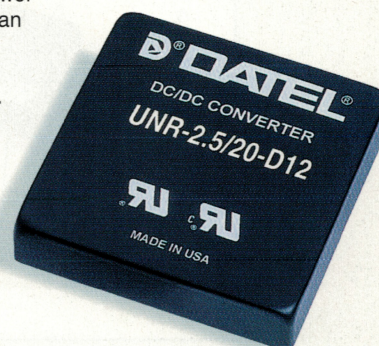
### in a 33% Smaller Package

XMP Series converters (single, dual and triple outputs at 5, 12 or 15 Volts) deliver up to 40W from 2" x 3" packages that fit the industry-standard 3" x 3" footprint. That's up to 60% more power in 33% less area ... at a lower price. UL1950 and EN60950 approvals pending.

## 5V-to-2.5V

### Non-Isolated with Adjustable Output

You no longer need custom power supplies for your ASIC's. You can set the output voltage of these new non-isolated DC/DC's anywhere from 2.1 to 3.6 Volts. Devices come in three package sizes with rated output currents of 2, 12 and 20 Amps. A 12V-input model is also available. See 2.5V UNR Models listed on page 4.





# Quality and Reliability

To ensure that we produce the most reliable power-conversion products possible, DATEL's five-pronged Quality Assurance Program reaches into every aspect of new-product design, development and manufacturing.

**Design for Reliability** Our multi-phased, new-product development process employs an approved components/vendors list, strict derating guidelines, worst-case analysis, extensive HALT, and FRACA (Failure Reporting Analysis and Corrective Action).

**HALT** The goal of the accelerated stress techniques used by DATEL is to force device maturity, in a short period of time, by subjecting devices to excessive levels of "every stimulus of potential value." We use Highly Accelerated Life Testing (HALT) repeatedly during each product's design and early-manufacturing phases to reveal latent defects or potential electro/mechanical design weaknesses that may eventually cause future field failures.

During HALT, prototype and preproduction DC/DC's are subjected to progressively more stressful levels of thermal cycling, rate of temperature change (thermal shock), vibration, power cycling, product-specific stresses (such as input-voltage or load variations), and combined environments. The selected stresses are not meant to simulate field environments but to precipitate failures. Applied stresses are continually stepped up until products eventually succumb. After the product goes through failure analysis and corrective actions and/or design changes, stresses are stepped up again, and the cycle is repeated until the "fundamental limit of the technology" is determined.

DATEL has invested in a Qualmark OVS-1 HALT tester capable of applying voltage and temperature extremes concurrent with 3-axis longitudinal and rotational random vibration. A typical HALT profile (for an A-Series converter) consists of thermal cycling (-40 to +100°C, 30°C/minute) and simultaneous, gradually increasing, random vibration up to 20G's with load

cycling and applied-voltage extremes added as desired. Many devices in DATEL's new A-Series could not be made to fail prior to reaching either the limits of the HALT chamber or some previously known physical limitation of the device.

**Characterization and Qualification** Each new product has its electrical performance verified via a comprehensive characterization process. Long-term reliability is confirmed by a rigorous qualification procedure that includes such strenuous tests as thermal shock and 500 hour life.

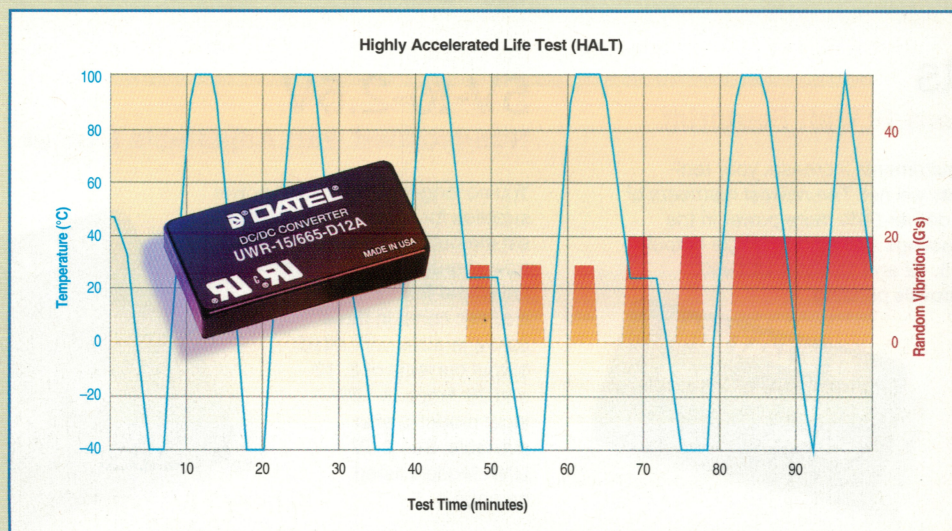
**In-Line Process Controls and Screening** A combination of statistical sampling and 100% inspections keeps our assembly line under constant control. Parameters such as solder-paste thickness, component placement, cleanliness, etc. are statistically sampled, charted, and fine tuned as necessary.

**Rapid Response to Problems** Our outstanding corrective-action system immediately addresses any detected shortcomings in products or processes. Whenever our assembly, quality or engineering personnel detect a product/process problem, we immediately perform detailed failure analysis and, if necessary, institute corrective actions.

## Qualification Testing

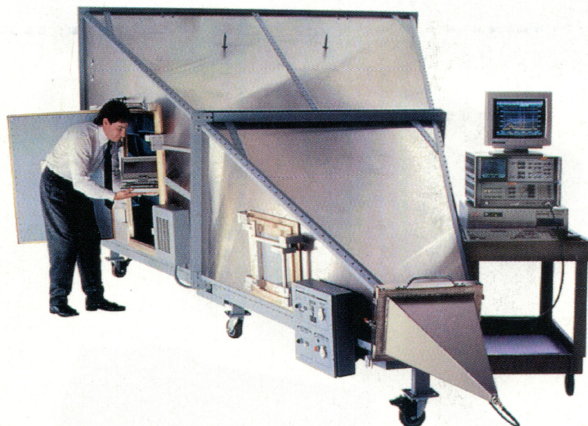
Qualification Test	Method/Comments
HALT	DATEL in-house procedure
High Temperature Storage	Max. rated temp., 1,000 hours
Thermal Shock	10 cycles, -55 to +125°C
Temperature/Humidity	+85°C, 85% humidity, 48 hours
Lead Integrity	DATEL in-house procedure
Life Test	+70°C, 500 hours*
Marking Permanency	DATEL in-house procedure
End Point Electrical Tests	Per product specification

\* Interim electrical test at 200 hours.





## When It Comes to EMI/EMC ... We Let the Other Guys Make All the Noise



Consider DATEL DC/DC converters for your critical applications requiring electromagnetic compatibility (EMC). We possess one of the most complete in-house test facilities of any major power-supply manufacturer. We have qualified most of our standard products to the more popular emis-

- Full EMC evaluation (precompliance)
- Fully automated test system
- EMCO GTEM 5305 (30MHz to 1GHz)
- Radiated emissions and immunity
- Emissions testing to:  
FCC15 and FCC18  
VDE087 and VDE0875  
EN55022
- Radiated immunity testing to IEC 801-3
- ESD immunity testing to IEC 801-2

sions standards, and as each new test is completed, the results are made available to our customers. In the meantime, we're happy to perform any specific EMI/EMC testing you require.

All new products currently in development are submitted for EMI/EMC testing early in the process so any potential problems can be detected and corrected long before the products are introduced.

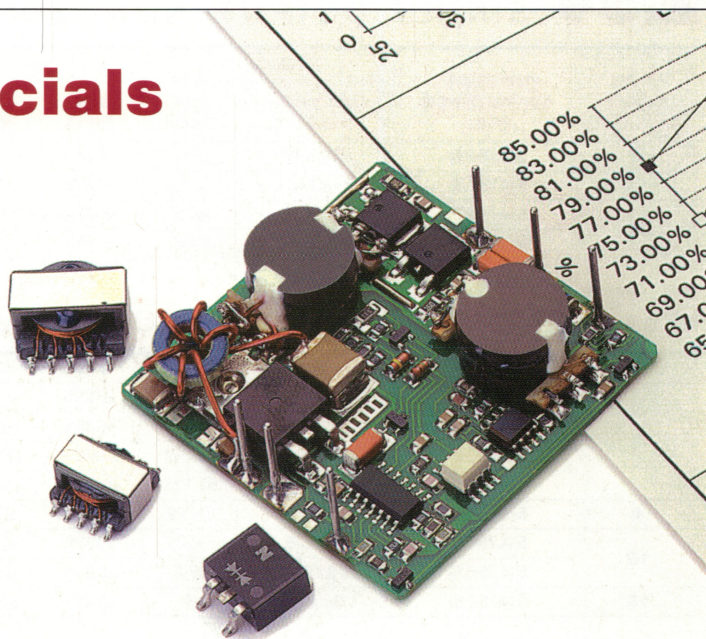
## Customs and Specials

- Isolated or non-isolated
- Single or multiple outputs
- High (>300V) or low-voltage (<2V) outputs
- Narrow or wide-range inputs
- Smart load sharing
- Extended temperatures
- Custom labeling (your logo!)
- Environmental screening
- EMI testing

The unique cost/performance/size objectives of your new high-density power distribution system may require unique DC/DC converters.

DATEL's world-class design, development and manufacturing team stands ready to work with you to define, design and deliver the exact power converters you need for your demanding, high-volume, OEM applications. And ... we'll do it on time and within budget!

Our experienced applications and design staffs; quick-turn prototype capability; highly automated SMT assembly facility; and in-line SPC quality-control techniques combine to give us the unique ability to design and deliver any quantity of power converters to the highest standards of quality and reliability.



We have compiled a large library of non-standard DC/DC designs that are currently used in a variety of telecom, medical, computer, railway, aerospace and industrial applications. We may already have the converter you need.

Contact us. Our goal is to provide you the highest-quality, most cost-effective power converters available.



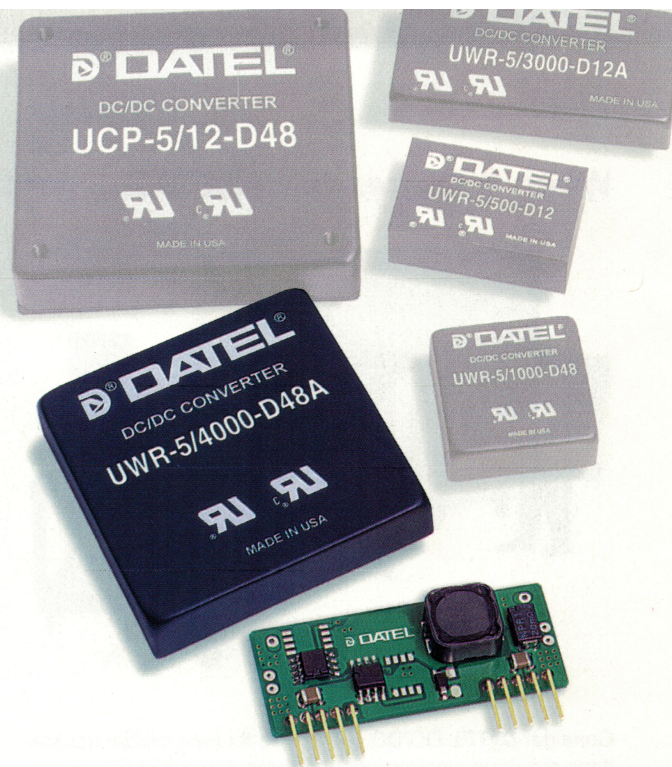


# Single Output

## DC/DC CONVERTERS

Converting one voltage to another is a theoretically simple task that any engineer can do. Designing and manufacturing products that accomplish the task efficiently, reliably, in the smallest space possible, at an affordable price is something very few companies can do . . . DATEL is one of them.

- Isolated (3 to 60W) and non-isolated (5 to 50W) designs
- All popular output voltages from 2.1 to 15 Volts
- Wide range inputs including 4.5-9V, 9-36V and 18-72V
- Industry standard pinouts and packages
- Designed to meet UL1950 and EN60950 (basic insulation levels, not all models)
- Qual tested; HALT tested; EMC tested
- Modifications and customs for OEM's



## 2.5V SINGLE OUTPUT, NON-ISOLATED <sup>①</sup>

Output Current (Amps, Max.)	Input Voltage, Nominal (Range) (Volts)	Package <sup>②</sup>		Regulation		Ripple/ Noise <sup>③</sup> (mVp-p)	Efficiency (Min.)	DATEL Model Number	DATEL Data Sheet <sup>④</sup>
		Dimensions (Inches)	Case, Pinout	Line (Max.)	Load (Max.)				
<b>2</b>	5 (4.75-5.5)	1 x 1 x 0.45	C7 <sup>⑤</sup>	±0.25%	±0.5%	50	87%	UNR-2.5/2-D5 <sup>⑥</sup>	UNR, 5-50W
<b>12</b>	5 (4.75-5.5)	2 x 1 x 0.45	C5 <sup>⑤</sup>	±0.25%	±0.5%	50	87%	UNR-2.5/12-D5 <sup>⑥</sup>	UNR, 5-50W
<b>20</b>	5 (4.75-5.5)	2 x 2 x 0.5	C6 <sup>⑤</sup>	±0.25%	±0.75%	50	84%	UNR-2.5/20-D5 <sup>⑥</sup>	UNR, 5-50W
	12 (10.8-13.2)	2 x 2 x 0.5	C6 <sup>⑤</sup>	±0.25%	±0.75%	50	83%	UNR-2.5/20-D12 <sup>⑥</sup>	UNR, 5-50W

## 3.3V SINGLE OUTPUT, NON-ISOLATED

<b>2.5</b>	12 (10.8-13.2)	1 x 1 x 0.45	C7, P10	±0.5%	±0.5%	100 <sup>⑦</sup>	83%	UNR-3.3/2500-D12	UNR, 8-40W
<b>3</b>	5 (4.75-5.5)	1 x 1 x 0.45	C7, P9	±0.25%	±0.5%	100 <sup>⑦</sup>	85%	UNR-3.3/3000-D5	UNR, 8-40W
	5 (4.75-5.5)	1 x 1 x 0.45	C7, P9	±0.25%	±0.5%	50	87%	UNR-3.3/3-D5	UNR, 10W
	5 (4.8-13.6)	2 x 0.8 x 0.4	B1, P18	±0.5% <sup>⑧</sup>	±1.5% <sup>⑧</sup>	50	91% <sup>⑧</sup>	UNS-3.3/3-D5 <sup>⑨</sup>	UNS, 10-15W
	5 (4.8-13.6)	2 x 0.8 x 0.4	B2, P18	±0.5% <sup>⑧</sup>	±1.5% <sup>⑧</sup>	50	95% <sup>⑧</sup>	UNS-3.3/3-D5D <sup>⑨</sup>	UNS, 10-15W
<b>8</b>	5 (4.75-5.5)	2 x 1 x 0.45	C5, P9	±0.25%	±0.5%	75 <sup>⑦</sup>	86%	UNR-3.3/8000-D5	UNR, 8-40W
<b>12</b>	5 (4.75-5.5)	2 x 2 x 0.45	C6, P9	±0.25%	±0.75%	125 <sup>⑦</sup>	84%	UNR-3.3/12000-D5	UNR, 8-40W
	5 (4.75-5.5)	2 x 2 x 0.5	C6 <sup>⑤</sup>	±0.25%	±0.75%	100	85%	UNR-3.3/12-D5	UNR, 40-50W
<b>15</b>	5 (4.75-5.5)	2 x 2	<sup>⑤</sup>	±0.25%	±0.75%	100	85%	UNR-3.3/15-D5	UNR, 40-50W

## 5V SINGLE OUTPUT, NON-ISOLATED

<b>3</b>	12 (6-16.5)	2 x 0.8 x 0.4	B1, P18	±0.5% <sup>⑧</sup>	±1.5% <sup>⑧</sup>	50	91% <sup>⑧</sup>	UNS-5/3-D12	UNS, 10-15W
	12 (6-16.5)	2 x 0.8 x 0.4	B2, P18	±0.5% <sup>⑧</sup>	±1.5% <sup>⑧</sup>	50	95% <sup>⑧</sup>	UNS-5/3-D12D	UNS, 10-15W
<b>5</b>	12 (10.8-13.2)	2 x 1 x 0.5	<sup>⑤</sup>	±0.5%	±1.0%	50	85%	UNR-5/5-D12	UNR, 25W

Listed specifications are typical at T<sub>A</sub> = +25°C under nominal line voltage and full-load conditions unless noted.

<sup>①</sup> Output voltage is user adjustable from 2.1 to 3.6V.

<sup>②</sup> See page 12 for detailed mechanical dimensions and pinouts.

<sup>③</sup> Ripple/Noise is specified over a 20MHz bandwidth.

<sup>④</sup> See page 11 for information on retrieving DATEL data sheets.

<sup>⑤</sup> Contact DATEL for detailed package and pinout information.

<sup>⑥</sup> Listed specifications for these products are preliminary.

Contact DATEL or visit our web site for the latest technical information.

<sup>⑦</sup> Listed specification is a maximum.

<sup>⑧</sup> Listed specification is a typical.

<sup>⑨</sup> Output voltage is user adjustable from 2.8 to 3.3V.



## 3.3V SINGLE OUTPUT, ISOLATED

Output Current (Amps, Max.)	Input Voltage, Nominal (Range) (Volts)	Package ①		Regulation		Ripple/ Noise ② (mVp-p)	Efficiency (Min.)	DATEL Model Number	DATEL Data Sheet ③
		Dimensions (Inches)	Case, Pinout	Line (Max.)	Load (Max.)				
1.8	5 (4.7-7.25)	2 x 1 x 0.375	C2, P11	±0.2%	±1.0%	30	69%	UWR-3.3/1800-D5A	A-Series, 6-10W
	48 (18-72)	2 x 1 x 0.375	C2, P11	±0.2%	±1.0%	50	72%	UWR-3.3/1800-D48A	A-Series, 6-10W
2.5	12 (9-18)	2 x 1 x 0.375	C2, P11	±0.2%	±1.0%	30	74%	UWR-3.3/2500-D12A	A-Series, 6-10W
3.65	24 (9-36)	2 x 2 x 0.5	C4, P6	±1.0%	±1.0%	75 ④	77%	UER-3.3/3650-D12	UER, 12-15W
	48 (18-72)	2 x 2 x 0.5	C4, P6	±1.0%	±1.0%	75 ④	77%	UER-3.3/3650-D48	UER, 12-15W
4.25	5 (4.7-7.5)	2 x 2 x 0.45	C4, P6	±1.0%	±1.0%	50	76%	UWR-3.3/4250-D5A	A-Series, 14-20W
4.85	24 (9-36)	2 x 2 x 0.45	C4, P6	±0.5%	±1.0%	40	77%	UWR-3.3/4850-D12A	A-Series, 14-20W
	24 (9-36)	2 x 2 x 0.45	C8, P6	±0.5%	±1.0%	75 ④	77%	UHR-3.3/4850-D12	UHR, 16-20W
	48 (18-72)	2 x 2 x 0.45	C4, P6	±1.0%	±1.0%	40	79%	UWR-3.3/4850-D48A	A-Series, 14-20W
	48 (18-72)	2 x 2 x 0.45	C8, P6	±1.0%	±1.0%	100 ④	78%	UHR-3.3/4850-D48	UHR, 16-20W
18	12 (9-18)	2.4 x 2.3 x 0.5	C12, P17	±0.4%	±1.0%	50	78%	UCP-3.3/18-D12	UCP, 60W
	24 (18-36)	2.4 x 2.3 x 0.5	C12, P17	±0.4%	±1.0%	50	79%	UCP-3.3/18-D24	UCP, 60W
	48 (36-75)	2.4 x 2.3 x 0.5	C12, P17	±0.4%	±1.0%	50	79%	UCP-3.3/18-D48	UCP, 60W

## 5V SINGLE OUTPUT, ISOLATED

0.5	5 (4.5-9)	1.25 x 0.8 x 0.45	C1, P1	±0.2%	±0.5%	120 ④	70%	UWR-5/500-D5	UWR, 3W
	5 (4.5-9)	1.25 x 0.8 x 0.45	C1A, P19	±0.2%	±0.5%	120 ④	70%	UWP-5/500-D5	UWP, 3W
	12 (9-18)	1.25 x 0.8 x 0.45	C1, P1	±0.2%	±0.5%	120 ④	70%	UWR-5/500-D12	UWR, 3W
	12 (9-18)	1.25 x 0.8 x 0.45	C1A, P19	±0.2%	±0.5%	120 ④	70%	UWP-5/500-D12	UWP, 3W
	48 (18-72)	1.25 x 0.8 x 0.45	C1, P1	±0.5%	±0.5%	120 ④	75%	UWR-5/500-D48	UWR, 3W
1	24 (18-36)	1 x 1 x 0.45	C7, P3	±2.0%	±2.0%	120 ④	75%	UWR-5/1000-D24	UWR, 5W
	48 (36-72)	1 x 1 x 0.45	C7, P3	±2.0%	±2.0%	120 ④	75%	UWR-5/1000-D48	UWR, 5W
1.6	5 (4.7-7.25)	2 x 1 x 0.375	C2, P11	±0.2%	±0.5%	50	74%	UWR-5/1600-D5A	A-Series, 6-10W
1.8	48 (18-72)	2 x 1 x 0.375	C2, P11	±0.2%	±0.5%	75	77%	UWR-5/1800-D48A	A-Series, 6-10W
2	12 (9-18)	2 x 1 x 0.375	C2, P11	±0.2%	±0.5%	50	79.5%	UWR-5/2000-D12A	A-Series, 6-10W
	24 (18-36)	2 x 1 x 0.375	C2, P11	±0.2%	±0.5%	50	83%	UWR-5/2000-D24E	A-Series, 6-10W
	48 (36-72)	2 x 1 x 0.375	C2, P11	±0.2%	±0.5%	50	82%	UWR-5/2000-D48E	A-Series, 6-10W
3	5 (4.7-7.5)	2 x 2 x 0.45	C4, P6	±1.0%	±1.0%	50	78%	UWR-5/3000-D5A	A-Series, 14-20W
	12 (9-18)	2 x 1 x 0.375	C2, P11	±0.2%	±0.5%	75	81%	UWR-5/3000-D12A ⑤	A-Series, 15W
	24 (9-36)	2 x 2 x 0.5	C4, P6	±1.0%	±1.0%	100 ④	80%	UER-5/3000-D12	UER, 12-15W
	24 (18-36)	2 x 1 x 0.375	C2, P11	±0.2%	±0.5%	75	81%	UWR-5/3000-D24A ⑤	A-Series, 15W
	48 (18-72)	2 x 2 x 0.5	C4, P6	±1.0%	±1.0%	100 ④	80%	UER-5/3000-D48	UER, 12-15W
	48 (36-72)	2 x 1 x 0.375	C2, P11	±0.2%	±0.5%	75	81%	UWR-5/3000-D48A ⑤	A-Series, 15W
4	24 (9-36)	2 x 2 x 0.45	C4, P6	±0.3%	±0.5%	30	81%	UWR-5/4000-D12A	A-Series, 14-20W
	24 (9-36)	2 x 2 x 0.45	C8, P6	±0.3%	±0.5%	100 ④	79%	UHR-5/4000-D12	UHR, 16-20W
	48 (18-72)	2 x 2 x 0.45	C4, P6	±0.3%	±0.5%	35	82%	UWR-5/4000-D48A	A-Series, 14-20W
	48 (36-72)	2 x 2 x 0.45	C4, P6	±0.3%	±0.5%	50	84%	UWR-5/4000-D48E	A-Series, 14-20W
	48 (18-72)	2 x 2 x 0.45	C8, P6	±0.3%	±0.5%	100 ④	80%	UHR-5/4000-D48	UHR, 16-20W
	24 (10-36)	3 x 2 x 0.5	C11, P14	±0.5%	±1.0%	75	77%	UMP-5/5-Q12	UMP, 25-40W
5	24 (10-36)	3 x 2 x 0.5	C10, P14	±0.5%	±1.0%	75	77%	UPB-5/5-Q12	UPB, 25-40W
	48 (18-72)	3 x 2 x 0.5	C11, P14	±0.5%	±1.0%	75	79%	UMP-5/6-Q48	UMP, 25-40W
6	48 (18-72)	3 x 2 x 0.5	C10, P14	±0.5%	±1.0%	75	79%	UPB-5/6-Q48	UPB, 25-40W
	24 (18-36)	3 x 2 x 0.5	C11, P14	±0.5%	±1.0%	75	82%	UMP-5/7-D24	UMP, 25-40W
7	24 (18-36)	3 x 2 x 0.5	C10, P14	±0.5%	±1.0%	75	82%	UPB-5/7-D24	UPB, 25-40W
	48 (36-72)	3 x 2 x 0.5	C11, P14	±0.5%	±1.0%	75	82%	UMP-5/8-D48	UMP, 25-40W
8	48 (36-72)	3 x 2 x 0.5	C10, P14	±0.5%	±1.0%	75	82%	UPB-5/8-D48	UPB, 25-40W
	12 (9-18)	2.4 x 2.3 x 0.5	C12, P17	±0.3%	±1.0%	100	83%	UCP-5/12-D12	UCP, 60W
12	24 (18-36)	2.4 x 2.3 x 0.5	C12, P17	±0.3%	±1.0%	75	84.5%	UCP-5/12-D24	UCP, 60W
	48 (36-75)	2.4 x 2.3 x 0.5	C12, P17	±0.3%	±1.0%	50	84%	UCP-5/12-D48	UCP, 60W

Listed specifications are typical at  $T_A = +25^\circ\text{C}$  under nominal line voltage and full-load conditions unless noted.

① See page 12 for detailed mechanical dimensions and pinouts.

② Ripple/Noise is specified over a 20MHz bandwidth.

③ See page 11 for information on retrieving DATEL data sheets.

④ Listed specification is a maximum.

⑤ Listed specifications for these products are preliminary.

See Page 11 to Request DC/DC Converter Data Sheets or a Full Product Line Catalog

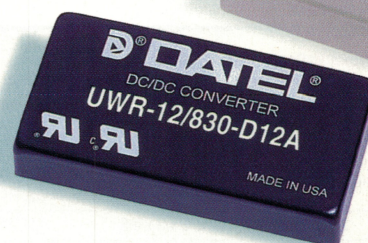
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# Single Output

DC/DC CONVERTERS



## 5.2V SINGLE OUTPUT, ISOLATED

Output Current (Amps, Max.)	Input Voltage, Nominal (Range) (Volts)	Package ①		Regulation		Ripple/ Noise ② (mVp-p)	Efficiency (Min.)	DATEL Model Number	DATEL Data Sheet ③
		Dimensions (Inches)	Case, Pinout	Line (Max.)	Load (Max.)				
1.5	5 (4.7-7.25)	2 x 1 x 0.375	C2, P11	±0.2%	±0.5%	100	74%	UWR-5.2/1500-D5A	A-Series, 6-10W
3	5 (4.7-7.5)	2 x 2 x 0.45	C4, P6	±0.3%	±0.5%	50	79%	UWR-5.2/3000-D5A	A-Series, 14-20W

## 12V SINGLE OUTPUT, ISOLATED

Output Current (Amps, Max.)	Input Voltage, Nominal (Range) (Volts)	Package ①		Regulation		Ripple/ Noise ② (mVp-p)	Efficiency (Min.)	DATEL Model Number	DATEL Data Sheet ③
		Dimensions (Inches)	Case, Pinout	Line (Max.)	Load (Max.)				
0.25	5 (4.5-9)	1.25 x 0.8 x 0.45	C1, P1	±0.5%	±0.5%	150 ④	72%	UWR-12/250-D5	UWR, 3W
	12 (9-18)	1.25 x 0.8 x 0.45	C1, P1	±0.5%	±0.5%	150 ④	72%	UWR-12/250-D12	UWR, 3W
	12 (9-18)	1.25 x 0.8 x 0.45	C1A, P19	±0.5%	±0.5%	150 ④	72%	UWP-12/250-D12	UWP, 3W
	48 (18-72)	1.25 x 0.8 x 0.45	C1, P1	±0.5%	±0.5%	150 ④	76%	UWR-12/250-D48	UWR, 3W
0.42	24 (18-36)	1 x 1 x 0.45	C7, P3	±2.0%	±2.0%	150 ④	80%	UWR-12/420-D24	UWR, 5W
	48 (36-72)	1 x 1 x 0.45	C7, P3	±2.0%	±2.0%	150 ④	80%	UWR-12/420-D48	UWR, 5W
0.665	5 (4.7-7.25)	2 x 1 x 0.375	C2, P11	±0.2%	±0.5%	75	75%	UWR-12/665-D5A	A-Series, 6-10W
0.75	48 (18-72)	2 x 1 x 0.375	C2, P11	±0.2%	±0.5%	75	80%	UWR-12/750-D48A	A-Series, 6-10W
0.83	12 (9-18)	2 x 1 x 0.375	C2, P11	±0.2%	±0.5%	75	81%	UWR-12/830-D12A	A-Series, 6-10W
1.25	5 (4.7-7.5)	2 x 2 x 0.45	C4, P6	±1.0%	±1.0%	75	80%	UWR-12/1250-D5A	A-Series, 14-20W
	12 (9-18)	2 x 1 x 0.375	C2, P11	±0.3%	±0.5%	75	81%	UWR-12/1250-D12A ⑤	A-Series, 15W
	24 (9-36)	2 x 2 x 0.5	C4, P6	±1.0%	±1.0%	100 ④	82%	UER-12/1250-D12	UER, 12-15W
	24 (18-36)	2 x 1 x 0.375	C2, P11	±0.3%	±0.5%	75	81%	UWR-12/1250-D24A ⑤	A-Series, 15W
	48 (18-72)	2 x 2 x 0.5	C4, P6	±1.0%	±1.0%	100 ④	82%	UER-12/1250-D48	UER, 12-15W
	48 (36-72)	2 x 1 x 0.375	C2, P11	±0.3%	±0.5%	75	81%	UWR-12/1250-D48A ⑤	A-Series, 15W
1.65	24 (9-36)	2 x 2 x 0.45	C4, P6	±0.3%	±0.5%	40	82%	UWR-12/1650-D12A	A-Series, 14-20W
	24 (9-36)	2 x 2 x 0.45	C8, P6	±0.3%	±0.5%	100 ④	81%	UHR-12/1650-D12	UHR, 16-20W
	48 (18-72)	2 x 2 x 0.45	C4, P6	±0.3%	±0.5%	50	82.5%	UWR-12/1650-D48A	A-Series, 14-20W
	48 (18-72)	2 x 2 x 0.45	C8, P6	±0.3%	±0.5%	100 ④	81%	UHR-12/1650-D48	UHR, 16-20W
2.1	24 (10-36)	3 x 2 x 0.5	C11, P14	±0.5%	±1.0%	90	81%	UMP-12/2.1-Q12	UMP, 25-40W
	24 (10-36)	3 x 2 x 0.5	C10, P14	±0.5%	±1.0%	90	81%	UPB-12/2.1-Q12	UPB, 25-40W
2.5	48 (18-72)	3 x 2 x 0.5	C11, P14	±0.5%	±1.0%	90	83%	UMP-12/2.5-Q48	UMP, 25-40W
	48 (18-72)	3 x 2 x 0.5	C10, P14	±0.5%	±1.0%	90	83%	UPB-12/2.5-Q48	UPB, 25-40W
3	24 (18-36)	3 x 2 x 0.5	C11, P14	±0.5%	±1.0%	90	83%	UMP-12/3-D24	UMP, 25-40W
	24 (18-36)	3 x 2 x 0.5	C10, P14	±0.5%	±1.0%	90	83%	UPB-12/3-D24	UPB, 25-40W
3.3	48 (36-72)	3 x 2 x 0.5	C11, P14	±0.5%	±1.0%	90	83%	UMP-12/3.3-D48	UMP, 25-40W
	48 (36-72)	3 x 2 x 0.5	C10, P14	±0.5%	±1.0%	90	83%	UPB-12/3.3-D48	UPB, 25-40W
5	24 (18-36)	2.4 x 2.3 x 0.5	C12, P17	±0.3%	±1.0%	75	84.5%	UCP-12/5-D24	UCP, 60W
	48 (36-75)	2.4 x 2.3 x 0.5	C12, P17	±0.3%	±1.0%	75	84.5%	UCP-12/5-D48	UCP, 60W

Listed specifications are typical at T<sub>A</sub> = +25°C under nominal line voltage and full-load conditions unless noted.

① See page 12 for detailed mechanical dimensions and pinouts.

② Ripple/Noise is specified over a 20MHz bandwidth.

③ See page 11 for information on retrieving DATEL data sheets.

④ Listed specification is a maximum.

⑤ Listed specifications for these products are preliminary.



# 15V SINGLE OUTPUT, ISOLATED

Output Current (Amps, Max.)	Input Voltage, Nominal (Range) (Volts)	Package ①		Regulation		Ripple/ Noise ② (mVp-p)	Efficiency (Min.)	DATEL Model Number	DATEL Data Sheet ③
		Dimensions (Inches)	Case, Pinout	Line (Max.)	Load (Max.)				
<b>0.2</b>	5 (4.5-9)	1.25 x 0.8 x 0.45	C1, P1	±0.5%	±0.5%	150 ④	72%	UWR-15/200-D5	UWR, 3W
	12 (9-18)	1.25 x 0.8 x 0.45	C1, P1	±0.5%	±0.5%	150 ④	72%	UWR-15/200-D12	UWR, 3W
	48 (18-72)	1.25 x 0.8 x 0.45	C1, P1	±0.5%	±0.5%	150 ④	76%	UWR-15/200-D48	UWR, 3W
<b>0.335</b>	24 (18-36)	1 x 1 x 0.45	C7, P3	±2.0%	±2.0%	150 ④	80%	UWR-15/335-D24	UWR, 5W
	48 (36-72)	1 x 1 x 0.45	C7, P3	±2.0%	±2.0%	150 ④	80%	UWR-15/335-D48	UWR, 5W
<b>0.53</b>	5 (4.7-7.25)	2 x 1 x 0.375	C2, P11	±0.2%	±0.5%	50	75%	UWR-15/530-D5A	A-Series, 6-10W
<b>0.6</b>	48 (18-72)	2 x 1 x 0.375	C2, P11	±0.2%	±0.5%	75	81.5%	UWR-15/600-D48A	A-Series, 6-10W
<b>0.665</b>	12 (9-18)	2 x 1 x 0.375	C2, P11	±0.2%	±0.5%	75	82%	UWR-15/665-D12A	A-Series, 6-10W
<b>1</b>	5 (4.7-7.5)	2 x 2 x 0.45	C4, P6	±1.0%	±1.0%	75	80%	UWR-15/1000-D5A	A-Series, 14-20W
	12 (9-18)	2 x 1 x 0.375	C2, P11	±0.3%	±0.5%	75	81%	UWR-15/1000-D12A ⑤	A-Series, 15W
	24 (9-36)	2 x 2 x 0.5	C4, P6	±1.0%	±1.0%	100 ④	82%	UWR-15/1000-D12	UWR, 12-15W
	24 (18-36)	2 x 1 x 0.375	C2, P11	±0.3%	±0.5%	75	81%	UWR-15/1000-D24A ⑤	A-Series, 15W
	48 (18-72)	2 x 2 x 0.5	C4, P6	±1.0%	±1.0%	100 ④	82%	UWR-15/1000-D48	UWR, 12-15W
	48 (36-72)	2 x 1 x 0.375	C2, P11	±0.3%	±0.5%	75	81%	UWR-15/1000-D48A ⑤	A-Series, 15W
<b>1.3</b>	24 (9-36)	2 x 2 x 0.45	C4, P6	±0.3%	±0.5%	40	82%	UWR-15/1300-D12A	A-Series, 14-20W
	24 (9-36)	2 x 2 x 0.45	C8, P6	±0.3%	±0.5%	100 ④	82%	UWR-15/1300-D12	UWR, 16-20W
	48 (18-72)	2 x 2 x 0.45	C4, P6	±0.3%	±0.5%	50	83%	UWR-15/1300-D48A	A-Series, 14-20W
	48 (18-72)	2 x 2 x 0.45	C8, P6	±0.3%	±0.5%	100 ④	82%	UWR-15/1300-D48	UWR, 16-20W
<b>1.7</b>	24 (10-36)	3 x 2 x 0.5	C11, P14	±0.5%	±1.0%	100	81%	UMP-15/1.7-Q12	UMP, 25-40W
	24 (10-36)	3 x 2 x 0.5	C10, P14	±0.5%	±1.0%	100	81%	UPB-15/1.7-Q12	UPB, 25-40W
<b>2</b>	48 (18-72)	3 x 2 x 0.5	C11, P14	±0.5%	±1.0%	100	82%	UMP-15/2-Q48	UMP, 25-40W
	48 (18-72)	3 x 2 x 0.5	C10, P14	±0.5%	±1.0%	100	82%	UPB-15/2-Q48	UPB, 25-40W
<b>2.5</b>	24 (18-36)	3 x 2 x 0.5	C11, P14	±0.5%	±1.0%	100	84%	UMP-15/2.5-D24	UMP, 25-40W
	24 (18-36)	3 x 2 x 0.5	C10, P14	±0.5%	±1.0%	100	84%	UPB-15/2.5-D24	UPB, 25-40W
<b>2.65</b>	48 (36-72)	3 x 2 x 0.5	C11, P14	±0.5%	±1.0%	100	83%	UMP-15/2.65-D48	UMP, 25-40W
	48 (36-72)	3 x 2 x 0.5	C10, P14	±0.5%	±1.0%	100	83%	UPB-15/2.65-D48	UPB, 25-40W
<b>4</b>	12 (9-18)	2.4 x 2.3 x 0.5	C12, P17	±0.3%	±1.0%	75	83%	UCP-15/4-D12	UCP, 60W
	24 (18-36)	2.4 x 2.3 x 0.5	C12, P17	±0.3%	±1.0%	75	84.5%	UCP-15/4-D24	UCP, 60W
	48 (36-75)	2.4 x 2.3 x 0.5	C12, P17	±0.3%	±1.0%	75	84.5%	UCP-15/4-D48	UCP, 60W

Listed specifications are typical at  $T_A = +25^\circ\text{C}$  under nominal line voltage and full-load conditions unless noted.

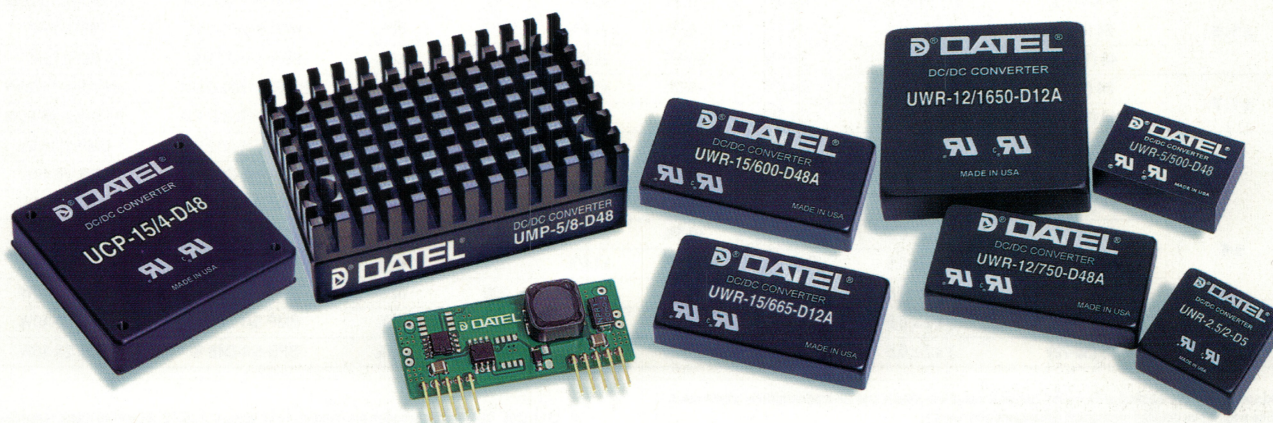
① See page 12 for detailed mechanical dimensions and pinouts.

② Ripple/Noise is specified over a 20MHz bandwidth.

③ See page 11 for information on retrieving DATEL data sheets.

④ Listed specification is a maximum.

⑤ Listed specifications for these products are preliminary.



See Page 11 to Request DC/DC Converter Data Sheets or a Full Product Line Catalog

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# Dual Output

## DC/DC CONVERTERS

When you need bipolar power in a local partition of a complex system, one of DATEL's dual-output DC/DC's is your single-package solution. These fully isolated and regulated switching power converters deliver accurate, clean, bipolar power wherever you need it.

- Fully isolated (to 1500Vdc), regulated and I/O protected
- $\pm 5V$ ,  $\pm 12V$  and  $\pm 15V$  outputs; Power from 3 to 40 Watts
- Wide range inputs including 4.5-9V, 9-36V and 18-72V
- Industry-standard packages and pinouts
- Designed to meet UL1950 and EN60950 (basic insulation levels, not all models)



## +5V/+3.3V DUAL OUTPUT, ISOLATED

Output Currents (Amps, Max.)	Input Voltage, Nominal (Range) (Volts)	Package ①		Regulation		Ripple/ Noise ② (mVp-p)	Efficiency (Min.)	DATEL Model Number	DATEL Data Sheet ③
		Dimensions (Inches)	Case, Pinout	Line (Max.)	Load (Max.)				
4/3	48 (36-75)	3 x 2 x 0.5	C10 ⑥	$\pm 1.0/\pm 1.0\%$	$\pm 1.0/\pm 1.0\%$	75/100	80%	BMP-5/4-3.3/D48	Contact DATEL

## $\pm 5V$ DUAL OUTPUT, ISOLATED

Output Currents (Amps, Max.)	Input Voltage, Nominal (Range) (Volts)	Package ①		Regulation		Ripple/ Noise ② (mVp-p)	Efficiency (Min.)	DATEL Model Number	DATEL Data Sheet ③
		Dimensions (Inches)	Case, Pinout	Line (Max.)	Load (Max.)				
$\pm 0.25$	12 (9-18)	1.25 x 0.8 x 0.45	C1, P2	$\pm 0.5\%$	$\pm 1.0\%$	120 ⑤	75%	BWR-5/250-D12	BWR, 3W
	48 (18-72)	1.25 x 0.8 x 0.45	C1, P2	$\pm 0.5\%$	$\pm 1.0\%$	120 ⑤	75%	BWR-5/250-D48	BWR, 3W
$\pm 0.5$	24 (18-36)	1 x 1 x 0.45	C7, P4	$\pm 2.0\%$	$\pm 2.0\%$	150 ⑤	75%	BWR-5/500-D24	BWR, 5W
	48 (36-72)	1 x 1 x 0.45	C7, P4	$\pm 2.0\%$	$\pm 2.0\%$	120 ⑤	75%	BWR-5/500-D48	BWR, 5W
$\pm 0.7$	5 (4.7-7.25)	2 x 1 x 0.375	C2, P12	$\pm 0.3\%$	$\pm 1.0\%$	50	76%	BWR-5/700-D5A	A-Series, 7-10W
	48 (18-72)	2 x 1 x 0.375	C2, P12	$\pm 0.3\%$	$\pm 1.0\%$	50	79%	BWR-5/700-D48A	A-Series, 7-10W
$\pm 0.9$	12 (9-18)	2 x 1 x 0.375	C2, P12	$\pm 0.3\%$	$\pm 1.0\%$	75	81%	BWR-5/900-D12A	A-Series, 7-10W
$\pm 1.5$	5 (4.7-7.5)	2 x 2 x 0.45	C4, P7	$\pm 0.3\%$	$\pm 0.5\%$	75	78%	BWR-5/1500-D5A	A-Series, 15-20W
	24 (9-36)	2 x 2 x 0.5	C4, P7	$\pm 0.5\%$	$\pm 1.0\%$	100 ⑤	80%	BER-5/1500-D12	BER, 15W
	48 (18-72)	2 x 2 x 0.5	C4, P7	$\pm 0.5\%$	$\pm 1.0\%$	100 ⑤	80%	BER-5/1500-D48	BER, 15W
$\pm 1.7$	24 (9-36)	2 x 2 x 0.45	C4, P7	$\pm 0.6\%$	$\pm 1.0\%$	75	80.5%	BWR-5/1700-D12A	A-Series, 15-20W
	48 (18-72)	2 x 2 x 0.45	C4, P7	$\pm 0.3\%$	$\pm 0.5\%$	75	81%	BWR-5/1700-D48A	A-Series, 15-20W
$\pm 4$	24 (10-36)	3 x 2 x 0.5	C11, P15	$\pm 0.5\%$	$\pm 1.0\%$	100	82%	BMP-5/4-Q12 ④	BMP, 25-40W
	24 (10-36)	3 x 2 x 0.5	C10, P15	$\pm 0.5\%$	$\pm 1.0\%$	100	82%	BPB-5/4-Q12 ④	BPB, 25-40W
	24 (18-36)	3 x 2 x 0.5	C11, P15	$\pm 0.5\%$	$\pm 1.0\%$	100	84%	BMP-5/4-D24 ④	BMP, 25-40W
	24 (18-36)	3 x 2 x 0.5	C10, P15	$\pm 0.5\%$	$\pm 1.0\%$	100	84%	BPB-5/4-D24 ④	BPB, 25-40W
	48 (18-72)	3 x 2 x 0.5	C11, P15	$\pm 0.5\%$	$\pm 1.0\%$	100	82%	BMP-5/4-Q48 ④	BMP, 25-40W
	48 (18-72)	3 x 2 x 0.5	C10, P15	$\pm 0.5\%$	$\pm 1.0\%$	100	82%	BPB-5/4-Q48 ④	BPB, 25-40W
	48 (36-72)	3 x 2 x 0.5	C11, P15	$\pm 0.5\%$	$\pm 1.0\%$	100	83%	BMP-5/4-D48 ④	BMP, 25-40W
	48 (36-72)	3 x 2 x 0.5	C10, P15	$\pm 0.5\%$	$\pm 1.0\%$	100	83%	BPB-5/4-D48 ④	BPB, 25-40W

Listed specifications are typical at  $T_A = +25^\circ\text{C}$  under nominal line voltage and full-load conditions unless noted.

① See page 12 for detailed mechanical dimensions and pinouts.

② Ripple/Noise is specified over a 20MHz bandwidth.

③ See page 11 for information on retrieving DATEL data sheets.

④ Q12, Q48, D24, and D48 models are rated at output powers of 25, 30, 35 and 40 Watts, respectively.

⑤ Listed specification is a maximum.

⑥ Contact DATEL for detailed package and pinout information.



# ±12V DUAL OUTPUT, ISOLATED

Output Currents (mA, Max.)	Input Voltage, Nominal (Range) (Volts)	Package ①		Regulation		Ripple/ Noise ② (mVp-p)	Efficiency (Min.)	DATEL Model Number	DATEL Data Sheet ③
		Dimensions (Inches)	Case, Pinout	Line (Max.)	Load (Max.)				
±105	5 (4.5-9)	1.25 x 0.8 x 0.45	C1, P2	±0.5%	±1.0%	150 ⑤	70%	BWR-12/105-D5	BWR, 3W
	5 (4.5-9)	1.25 x 0.8 x 0.45	C1A, P20	±0.5%	±1.0%	150 ⑤	70%	BWP-12/105-D5	BWP, 3W
±125	12 (9-18)	1.25 x 0.8 x 0.45	C1, P2	±0.5%	±1.0%	150 ⑤	73%	BWR-12/125-D12	BWR, 3W
	48 (18-72)	1.25 x 0.8 x 0.45	C1, P2	±0.5%	±1.0%	150 ⑤	78%	BWR-12/125-D48	BWR, 3W
±210	24 (18-36)	1 x 1 x 0.45	C7, P4	±2.0%	±2.0%	150 ⑤	80%	BWR-12/210-D24	BWR, 5W
	48 (36-72)	1 x 1 x 0.45	C7, P4	±2.0%	±2.0%	150 ⑤	80%	BWR-12/210-D48	BWR, 5W
±335	5 (4.7-7.25)	2 x 1 x 0.375	C2, P12	±0.3%	±1.0%	75	76%	BWR-12/335-D5A	A-Series, 7-10W
±415	12 (9-18)	2 x 1 x 0.375	C2, P12	±0.3%	±1.0%	100	83%	BWR-12/415-D12A	A-Series, 7-10W
	48 (18-72)	2 x 1 x 0.375	C2, P12	±0.3%	±1.0%	75	80.5%	BWR-12/415-D48A	A-Series, 7-10W
±625	5 (4.7-7.5)	2 x 2 x 0.45	C4, P7	±0.3%	±0.5%	75	79%	BWR-12/625-D5A	A-Series, 15-20W
	24 (9-36)	2 x 2 x 0.5	C4, P7	±0.5%	±1.0%	100 ⑤	81%	BER-12/625-D12	BER, 15W
	48 (18-72)	2 x 2 x 0.5	C4, P7	±0.5%	±1.0%	100 ⑤	81%	BER-12/625-D48	BER, 15W
±830	24 (9-36)	2 x 2 x 0.45	C4, P7	±0.3%	±0.5%	75	81.5%	BWR-12/830-D12A	A-Series, 15-20W
	48 (18-72)	2 x 2 x 0.45	C4, P7	±0.4%	±0.5%	75	81%	BWR-12/830-D48A	A-Series, 15-20W
±1650	24 (10-36)	3 x 2 x 0.5	C11, P15	±0.5%	±1.0%	100	82%	BMP-12/1.65-Q12 ④	BMP, 25-40W
	24 (10-36)	3 x 2 x 0.5	C10, P15	±0.5%	±1.0%	100	82%	BPB-12/1.65-Q12 ④	BPB, 25-40W
	24 (18-36)	3 x 2 x 0.5	C11, P15	±0.5%	±1.0%	100	84%	BMP-12/1.65-D24 ④	BMP, 25-40W
	24 (18-36)	3 x 2 x 0.5	C10, P15	±0.5%	±1.0%	100	84%	BPB-12/1.65-D24 ④	BPB, 25-40W
	48 (18-72)	3 x 2 x 0.5	C11, P15	±0.5%	±1.0%	100	83%	BMP-12/1.65-Q48 ④	BMP, 25-40W
	48 (18-72)	3 x 2 x 0.5	C10, P15	±0.5%	±1.0%	100	83%	BPB-12/1.65-Q48 ④	BPB, 25-40W
	48 (36-72)	3 x 2 x 0.5	C11, P15	±0.5%	±1.0%	100	83%	BMP-12/1.65-D48 ④	BMP, 25-40W
	48 (36-72)	3 x 2 x 0.5	C10, P15	±0.5%	±1.0%	100	83%	BPB-12/1.65-D48 ④	BPB, 25-40W
	48 (36-72)	3 x 2 x 0.5	C10, P15	±0.5%	±1.0%	100	83%	BPB-12/1.65-D48 ④	BPB, 25-40W

# ±15V DUAL OUTPUT, ISOLATED

±85	5 (4.5-9)	1.25 x 0.8 x 0.45	C1, P2	±0.5%	±0.5%	150 ⑤	70%	BWR-15/85-D5	BWR, 3W
	5 (4.5-9)	1.25 x 0.8 x 0.45	C1A, P20	±0.5%	±0.5%	150 ⑤	70%	BWP-15/85-D5	BWP, 3W
±100	12 (9-18)	1.25 x 0.8 x 0.45	C1, P2	±0.5%	±1.0%	150 ⑤	73%	BWR-15/100-D12	BWR, 3W
	48 (18-72)	1.25 x 0.8 x 0.45	C1, P2	±0.5%	±1.0%	150 ⑤	80%	BWR-15/100-D48	BWR, 3W
±165	24 (18-36)	1 x 1 x 0.45	C7, P4	±2.0%	±2.0%	150 ⑤	80%	BWP-15/100-D48	BWP, 3W
	48 (36-72)	1 x 1 x 0.45	C7, P4	±2.0%	±2.0%	150 ⑤	80%	BWR-15/165-D24	BWR, 5W
±275	5 (4.7-7.25)	2 x 1 x 0.375	C2, P12	±0.3%	±1.0%	75	75%	BWR-15/275-D5A	A-Series, 7-10W
±330	12 (9-18)	2 x 1 x 0.375	C2, P12	±0.3%	±1.0%	75	83%	BWR-15/330-D12A	A-Series, 7-10W
	48 (18-72)	2 x 1 x 0.375	C2, P12	±0.3%	±1.0%	75	81.5%	BWR-15/330-D48A	A-Series, 7-10W
±500	5 (4.7-7.5)	2 x 2 x 0.45	C4, P7	±0.3%	±0.5%	75	80%	BWR-15/500-D5A	A-Series, 15-20W
	24 (9-36)	2 x 2 x 0.5	C4, P7	±0.5%	±1.0%	100 ⑤	81%	BER-15/500-D12	BER, 15W
	48 (18-72)	2 x 2 x 0.5	C4, P7	±0.5%	±1.0%	100 ⑤	81%	BER-15/500-D48	BER, 15W
±670	24 (9-36)	2 x 2 x 0.45	C4, P7	±0.3%	±0.5%	75	82%	BWR-15/670-D12A	A-Series, 15-20W
	48 (18-72)	2 x 2 x 0.45	C4, P7	±0.3%	±0.5%	75	82%	BWR-15/670-D48A	A-Series, 15-20W
±1300	24 (10-36)	3 x 2 x 0.5	C11, P15	±0.5%	±1.0%	100	83%	BMP-15/1.3-Q12 ④	BMP, 25-40W
	24 (10-36)	3 x 2 x 0.5	C10, P15	±0.5%	±1.0%	100	83%	BPB-15/1.3-Q12 ④	BPB, 25-40W
	24 (18-36)	3 x 2 x 0.5	C11, P15	±0.5%	±1.0%	100	85%	BMP-15/1.3-D24 ④	BMP, 25-40W
	24 (18-36)	3 x 2 x 0.5	C10, P15	±0.5%	±1.0%	100	85%	BPB-15/1.3-D24 ④	BPB, 25-40W
	48 (18-72)	3 x 2 x 0.5	C11, P15	±0.5%	±1.0%	100	83%	BMP-15/1.3-Q48 ④	BMP, 25-40W
	48 (18-72)	3 x 2 x 0.5	C10, P15	±0.5%	±1.0%	100	83%	BPB-15/1.3-Q48 ④	BPB, 25-40W
	48 (36-72)	3 x 2 x 0.5	C11, P15	±0.5%	±1.0%	100	85%	BMP-15/1.3-D48 ④	BMP, 25-40W
	48 (36-72)	3 x 2 x 0.5	C10, P15	±0.5%	±1.0%	100	85%	BPB-15/1.3-D48 ④	BPB, 25-40W

Listed specifications are typical at T<sub>A</sub> = +25°C under nominal line voltage and full-load conditions unless noted.

① See page 12 for detailed mechanical dimensions and pinouts.

② Ripple/Noise is specified over a 20MHz bandwidth.

③ See page 11 for information on retrieving DATEL data sheets.

④ Q12, Q48, D24, and D48 models are rated at output powers of 25, 30, 35 and 40 Watts, respectively.

⑤ Listed specification is a maximum.

See Page 11 to Request DC/DC Converter Data Sheets or a Full Product Line Catalog

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# Triple Output

## DC/DC CONVERTERS

DATEL's fully isolated, triple-output, switching DC/DC converters are optimized for use in modern distributed power architectures. Operating from intermediate bus voltages between 4.7 and 72V, these highly efficient "plug-in" converters can provide all the "clean" power you need to a mixed analog/digital local partition.

- +5V primary and  $\pm 12V$  or  $\pm 15V$  auxiliary outputs
- Primary current to 5A; Auxiliary currents to  $\pm 1A$
- Total output power from 8 to 40 Watts
- Fully isolated (to 1500Vdc), regulated and I/O protected
- 2" x 1" units are the industry's smallest full-featured triples
- Designed to meet UL1950 and EN60950 (basic insulation levels, not all models)
- Qual tested; HALT tested; EMC tested
- Modifications and customs for OEM's



## +5/ $\pm 12V$ TRIPLE OUTPUT, ISOLATED

Primary +5V Output Current (Amps, Max.)	Auxiliary $\pm 12V$ Output Currents (mA, Max.)	Input Voltage, Nominal (Range) (Volts)	Package ①		Primary Output R/N ② (mVp-p)	Efficiency (Min.)	DATEL Model Number	DATEL Data Sheet ③
			Dimensions (Inches)	Case, Pinout				
1	$\pm 125$	5 (4.7-7)	2 x 1 x 0.375	C3, P5	75	74%	TWR-5/1000-12/125-D5A	A-Series, 8-11W
	$\pm 210$	12 (9-18)	2 x 1 x 0.375	C3, P5	75	80.5%	TWR-5/1000-12/210-D12A	A-Series, 8-11W
	$\pm 210$	24 (18-36)	2 x 1 x 0.375	C3, P5	75	82%	TWR-5/1000-12/210-D24A	A-Series, 8-11W
	$\pm 210$	48 (36-72)	2 x 1 x 0.375	C3, P5	75	82%	TWR-5/1000-12/210-D48A	A-Series, 8-11W
1.2	$\pm 250$	48 (18-72)	2 x 2 x 0.45	C4, P8	50	79%	TWR-5/1200-12/250-D48A	A-Series, 12-15W
1.5	$\pm 250$	48 (18-72)	2 x 2 x 0.45	C4, P8	50	78%	TWR-5/1500-12/250-D48A	A-Series, 12-15W
1.8	$\pm 200$	48 (18-72)	2 x 2 x 0.45	C4, P8	50	79%	TWR-5/1800-12/200-D48A	A-Series, 12-15W
3	$\pm 500$	24 (9-36)	2 x 2 x 0.45	C4, P13	50	81%	TWR-5/3000-12/500-D12A	A-Series, 20W
	$\pm 500$	48 (18-72)	2 x 2 x 0.45	C4, P13	50	82%	TWR-5/3000-12/500-D48A	A-Series, 20W
5	$\pm 1000$	24 (10-36)	3 x 2 x 0.5	C11, P16	75	82%	TMP-5/5-12/1-Q12 ④	TMP, 25-40W
	$\pm 1000$	24 (10-36)	3 x 2 x 0.5	C10, P16	75	82%	TPB-5/5-12/1-Q12 ④	TPB, 25-40W
	$\pm 1000$	24 (18-36)	3 x 2 x 0.5	C11, P16	75	82%	TMP-5/5-12/1-Q48 ④	TMP, 25-40W
	$\pm 1000$	24 (18-36)	3 x 2 x 0.5	C10, P16	75	82%	TPB-5/5-12/1-Q48 ④	TPB, 25-40W
	$\pm 1000$	48 (18-72)	3 x 2 x 0.5	C11, P16	75	83%	TMP-5/5-12/1-D24 ④	TMP, 25-40W
	$\pm 1000$	48 (18-72)	3 x 2 x 0.5	C10, P16	75	83%	TPB-5/5-12/1-D24 ④	TPB, 25-40W
	$\pm 1000$	48 (36-72)	3 x 2 x 0.5	C11, P16	75	83%	TMP-5/5-12/1-D48 ④	TMP, 25-40W
	$\pm 1000$	48 (36-72)	3 x 2 x 0.5	C10, P16	75	83%	TPB-5/5-12/1-D48 ④	TPB, 25-40W

Listed specifications are typical at  $T_A = +25^\circ\text{C}$  under nominal line voltage and full-load conditions unless noted.

① See page 12 for detailed mechanical dimensions and pinouts.

② Ripple/Noise (R/N) is specified over a 20MHz bandwidth.

③ See page 11 for information on retrieving DATEL data sheets.

④ Q12, Q48, D24, and D48 models are rated at total output powers of 25, 30, 35 and 40 Watts, respectively.



# **+5/±15V** TRIPLE OUTPUT, ISOLATED

Primary +5V Output Current (Amps, Max.)	Auxiliary ±15V Output Currents (mA, Max.)	Input Voltage, Nominal (Range) (Volts)	Package ①		Primary Output R/N ② (mVp-p)	Efficiency (Min.)	DATEL Model Number	DATEL Data Sheet ③
			Dimensions (Inches)	Case, Pinout				
<b>0.8</b>	±150	5 (4.7-7)	2 x 1 x 0.375	C3, P5	75	74%	TWR-5/800-15/150-D5A	A-Series, 8-11W
	±200	12 (9-18)	2 x 1 x 0.375	C3, P5	75	79%	TWR-5/1000-15/200-D12A	A-Series, 8-11W
	±200	24 (18-36)	2 x 1 x 0.375	C3, P5	75	82%	TWR-5/1000-15/200-D24A	A-Series, 8-11W
	±200	48 (36-72)	2 x 1 x 0.375	C3, P5	75	82%	TWR-5/1000-15/200-D48A	A-Series, 8-11W
	±250	48 (18-72)	2 x 2 x 0.45	C4, P8	50	79%	TWR-5/1000-15/250-D48A	A-Series, 12-15W
<b>1</b>	±250	48 (18-72)	2 x 2 x 0.45	C4, P8	50	79%	TWR-5/1500-15/250-D48A	A-Series, 12-15W
<b>1.5</b>	±150	48 (18-72)	2 x 2 x 0.45	C4, P8	50	80%	TWR-5/1800-15/150-D48A	A-Series, 12-15W
<b>1.8</b>	±500	24 (9-36)	2 x 2 x 0.45	C4, P13	50	81%	TWR-5/3000-15/500-D12A	A-Series, 20W
	±500	48 (18-72)	2 x 2 x 0.45	C4, P13	50	81%	TWR-5/3000-15/500-D48A	A-Series, 20W
<b>3</b>	±1000	24 (10-36)	3 x 2 x 0.5	C11, P16	75	82%	TMP-5/5-15/1-Q12 ④	TMP, 25-40W
	±1000	24 (10-36)	3 x 2 x 0.5	C10, P16	75	82%	TPB-5/5-15/1-Q12 ④	TPB, 25-40W
	±1000	24 (18-36)	3 x 2 x 0.5	C11, P16	75	83%	TMP-5/5-15/1-D24 ④	TMP, 25-40W
	±1000	24 (18-36)	3 x 2 x 0.5	C10, P16	75	83%	TPB-5/5-15/1-D24 ④	TPB, 25-40W
	±1000	48 (18-72)	3 x 2 x 0.5	C11, P16	75	82%	TMP-5/5-15/1-Q48 ④	TMP, 25-40W
	±1000	48 (18-72)	3 x 2 x 0.5	C10, P16	75	82%	TPB-5/5-15/1-Q48 ④	TPB, 25-40W
	±1000	48 (36-72)	3 x 2 x 0.5	C11, P16	75	83%	TMP-5/5-15/1-D48 ④	TMP, 25-40W
	±1000	48 (36-72)	3 x 2 x 0.5	C10, P16	75	83%	TPB-5/5-15/1-D48 ④	TPB, 25-40W

Listed specifications are typical at  $T_A = +25^\circ\text{C}$  under nominal line voltage and full-load conditions unless noted.

① See page 12 for detailed mechanical dimensions and pinouts.

② Ripple/Noise (R/N) is specified over a 20MHz bandwidth.

③ See below for information on retrieving DATEL data sheets.

④ Q12, Q48, D24, and D48 models are rated at total output powers of 25, 30, 35 and 40 Watts, respectively.

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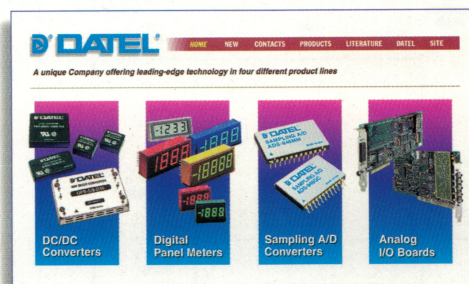
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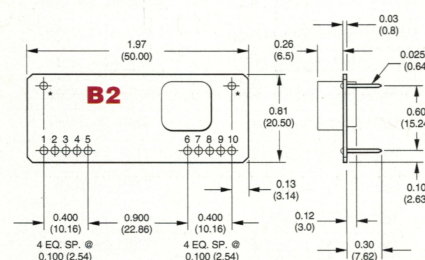
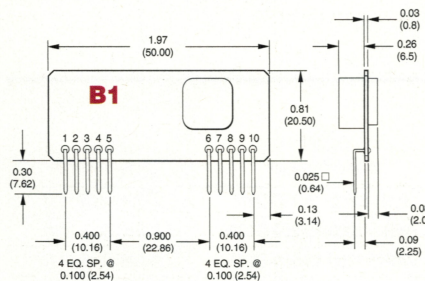
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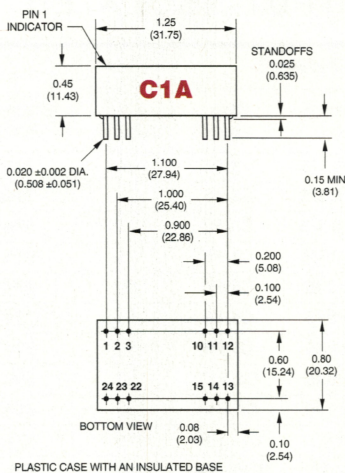
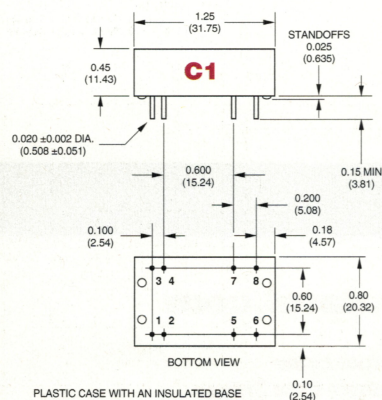




## Mechanical SPECIFICATIONS

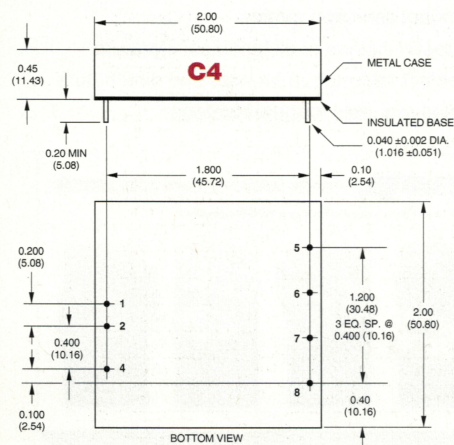
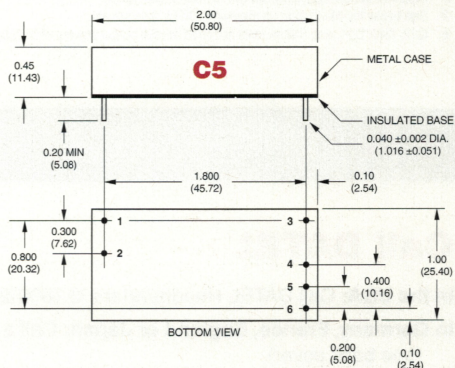
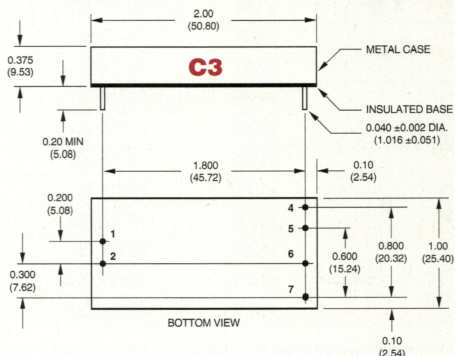
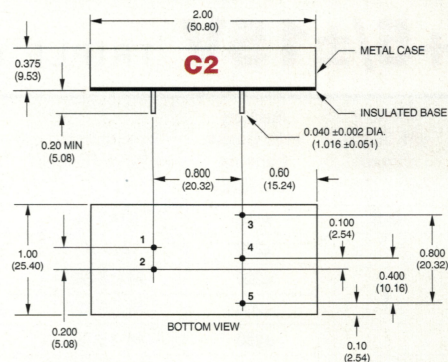


\* NO CONNECTION, FOR MECHANICAL STABILITY ONLY

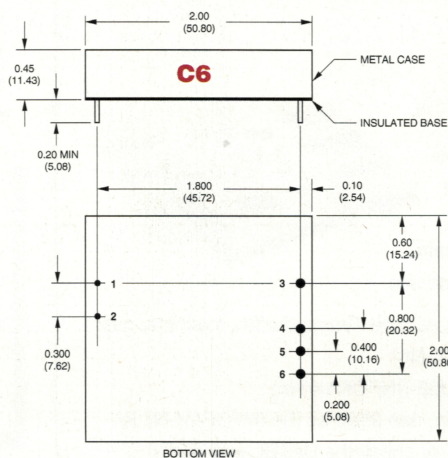


## I/O CONNECTIONS

Pin	Function P19	Function P20
1	+Input	+Input
2	N.C.	−Output
3	N.C.	Common
10	−Output	Common
11	+Output	+Output
12	−Input	−Input
13	−Input	−Input
14	+Output	+Output
15	−Output	Common
22	N.C.	Common
23	N.C.	−Output
24	+Input	+Input

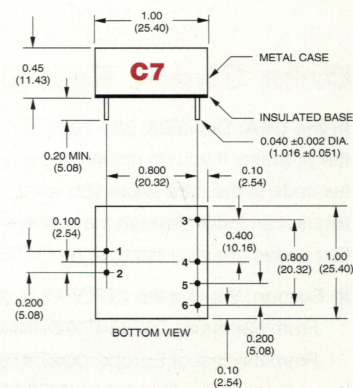


FOR UER AND BER MODELS, CASE IS PLASTIC AND CASE HEIGHT IS 0.50 (12.7)

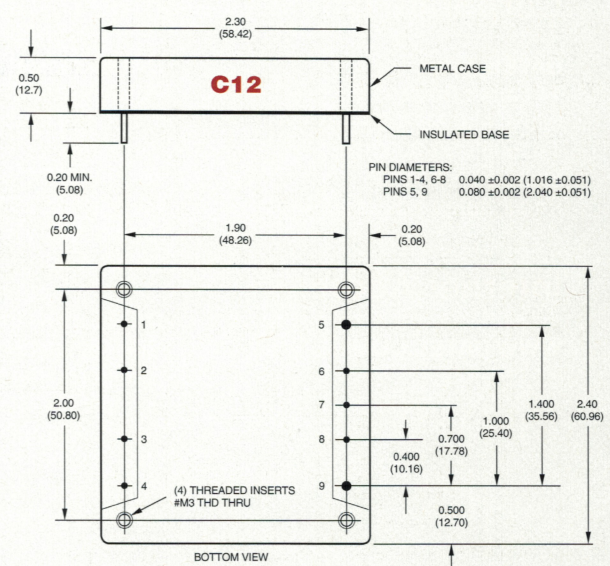
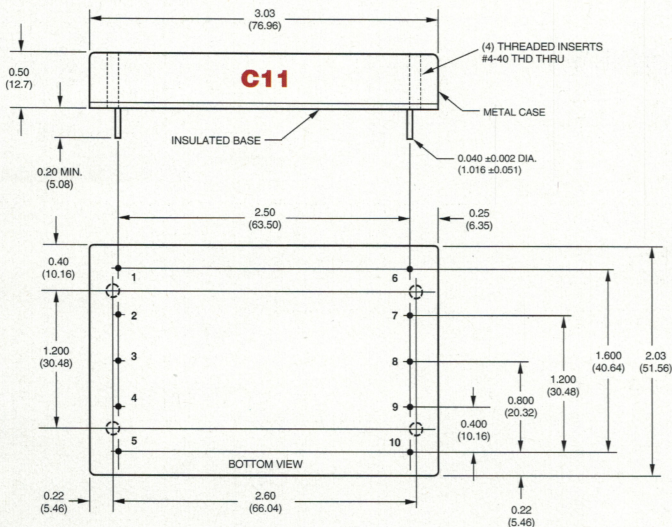
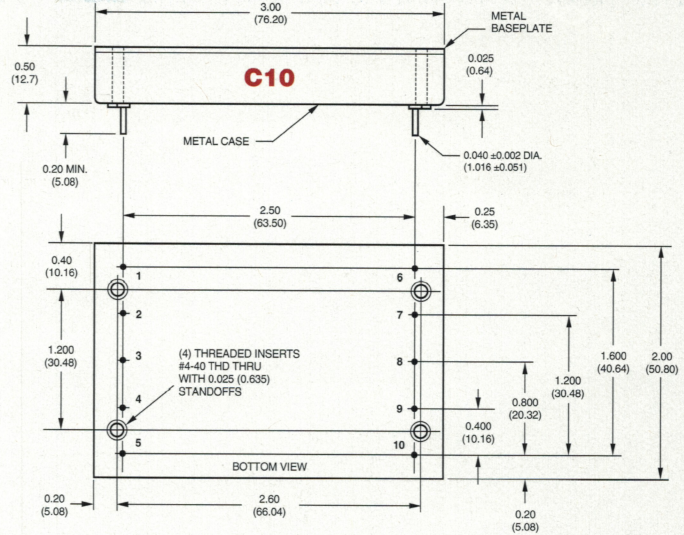
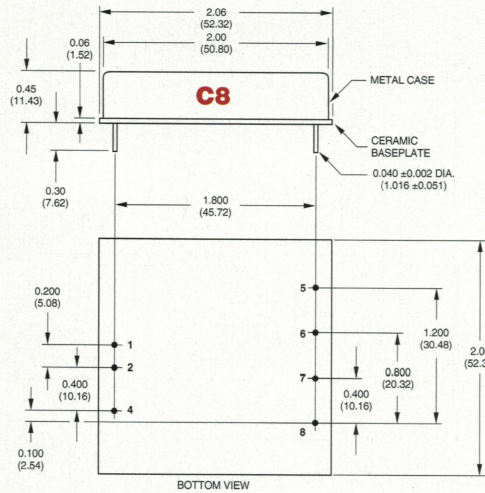


PIN DIAMETERS:

PINS 1-2	0.040 ±0.002 (1.016 ±0.051)
PINS 3-6	0.060 ±0.002 (1.524 ±0.051)



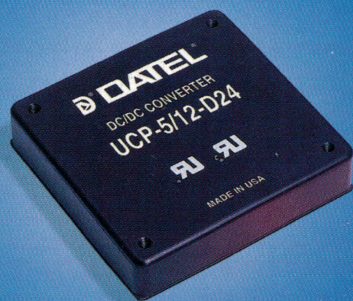




## I/O CONNECTIONS

Pinout	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9	PIN 10
P1	+Input	+Input	-Input	-Input	Common	+Output	Common	+Output	No pin	No pin
P2	+Input	+Input	-Input	-Input	Common	+Output	Common	-Output	No pin	No pin
P3	+Input	-Input	+Output	No pin	No pin	Common	No pin	No pin	No pin	No pin
P4	+Input	-Input	+Output	Common	No pin	-Output	No pin	No pin	No pin	No pin
P5	+Input	-Input	No pin	+12/15V Out	-12/15V Out	Common	+5V Out	No pin	No pin	No pin
P6	+Input	-Input	No pin	Control	No pin	+Output	Common	Trim	No pin	No pin
P7	+Input	-Input	No pin	Control	+Output	Common	-Output	Trim	No pin	No pin
P8	+Input	-Input	No pin	No pin	+12/15V Out	+5V Out	Common	-12/15V Out	No pin	No pin
P9	Logic Gnd.	Control	+Output	Output Rtn.	Input Rtn.	+Input	No pin	No pin	No pin	No pin
P10	T.P. (DNC)	N.C.	+Output	Output Rtn.	Input Rtn.	+Input	No pin	No pin	No pin	No pin
P11	+Input	-Input	+Output	No pin	Common	No pin	No pin	No pin	No pin	No pin
P12	+Input	-Input	+Output	Common	-Output	No pin	No pin	No pin	No pin	No pin
P13	+Input	-Input	No pin	Control	+12/15V Out	+5V Out	Common	-12/15V Out	No pin	No pin
P14	No pin	-Input	+Input	Case	Control	No pin	No pin	Common	+Output	Trim
P15	No pin	-Input	+Input	Case	Control	-Output	No pin	Common	+Output	Trim
P16	No pin	-Input	+Input	Case	Control	-12/15V Out	+12/15V Out	Common	+5V Out	Trim
P17	-Input	Case	Control	+Input	-Output	-Sense	Trim	+Sense	+Output	No pin
P18	+Input	+Input	-Input	-Input	Control	Trim	Common	Common	+Output	+Output





# DC/DC CONVERTERS

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